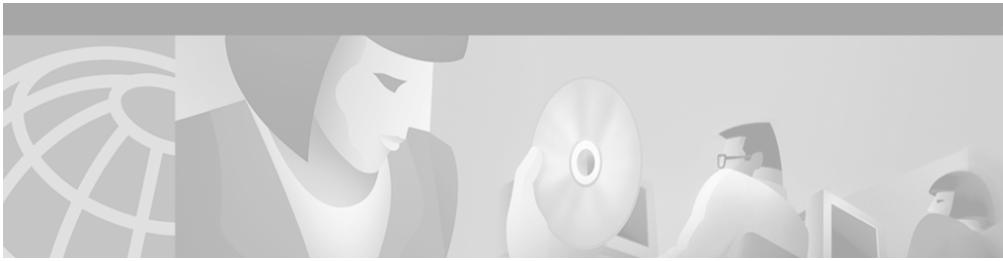

Cisco 10000 ESR
AC Power Entry Module Installation

This publication contains instructions for installing the AC Power Entry Module (PEM) in the Cisco 10000 Edge Services Router (ESR). If you are not familiar with the Cisco 10000 router, see the *Cisco 10000 ESR System Description,* and the *Cisco 10000 ESR Hardware Installation Guide* for additional information.

Contents

The following sections are included in this configuration guide:

- Product Description, page 2
- Prerequisites and Preparation, page 3
- Installation Guidelines, page 4
- Adding or Replacing an AC PEM, page 5
- FCC Class A Compliance, page 20
- Cisco Connection Online, page 20
- Documentation CD-ROM, page 22

CISCO SYSTEMS

Corporate Headquarters: Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

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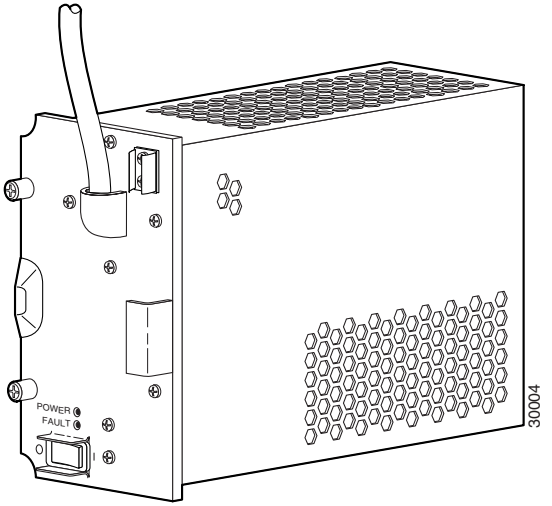
78-10832-01

Product Description

The AC PEM provides power conversion directly from the facility VAC input power (100 VAC to 240 VAC) to the –48V VDC used internally by the system (see Figure 1). AC power is delivered to the AC PEM from the VAC connection power cable to the power cord attached to the PEM.

Figure 1 AC PEM



There are two PEM bays in the chassis; however, you only need one PEM to power the router. You can install an additional PEM for power redundancy.

Prerequisites and Preparation

Before you perform any of the procedures in this guide, Cisco recommends that you:

- Read the safety guidelines in the next section and review the electrical safety and ESD-prevention guidelines in the *Cisco 10000 ESR Hardware Installation Guide*.
- Ensure that you have all of the necessary tools and equipment before beginning the installation (see the "Installation Guidelines" section on page 4).
- Have access to the following documents (shipped with your Cisco 10000 system) during the installation:
  - *Cisco 10000 ESR System Description*
  - *Cisco 10000 ESR Hardware Installation Guide*
  - *Cisco 10000 ESR Troubleshooting Guide*
  - *Cisco 10000 ESR Software Configuration Guide*

Safety Guidelines

Before you begin the installation or replacement procedure, review the safety guidelines in this section to avoid injuring yourself or damaging the equipment. Before you install, configure, or perform maintenance on the router, you should also review the safety warnings listed in the *Cisco 10000 ESR Hardware Installation Guide*.

Safety Warnings

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, may harm you. A warning symbol precedes each warning statement. The following warning is an example of a safety warning. It identifies the warning symbol and associates it with a bodily injury hazard.

Warning **This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the Regulatory Compliance and Safety Information document that accompanied this device.**

Note If you need translations of the safety warning, see the *Cisco 10000 ESR Hardware Installation Guide*.

Installation Guidelines

The Cisco 10000 system is hot-swappable, which means you can remove and replace a defective PEM while the system is operating (assuming that your system has a second AC PEM installed for redundancy). It is not necessary to notify the software or reset the system power. This feature lets you add, remove, or replace a second PEM while the system maintains all routing information and ensures session preservation.

Required Tools and Equipment

You need the following tools and equipment to install an AC PEM:

- A Number 2 Phillips screwdriver
- 3/16-inch flat-blade screwdriver
- An electrostatic discharge (ESD) preventive wrist or ankle strap with connection cord

Adding or Replacing an AC PEM

This section describes how to add or replace an AC PEM in the Cisco 10000 chassis. It contains the following procedures:

- Removing the Front Cover, page 5
- Installing a Second AC PEM, page 7
- Replacing an AC PEM, page 12
- Troubleshooting the Installation, page 19

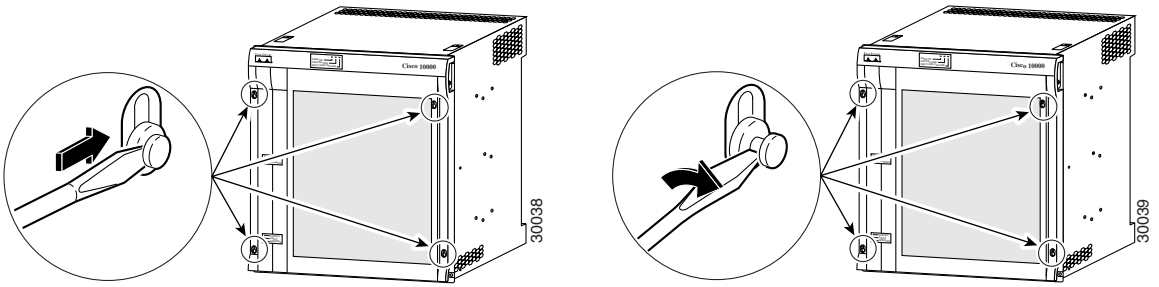
Removing the Front Cover

Use the following procedure to remove the front cover from the system. If your system does not use a front cover, go to the "Installing a Second AC PEM" section on page 7 or to the "Replacing an AC PEM" section on page 12.

Step 1 Unlock each bezel plug by inserting the tip of a flat-blade screwdriver between the top and bottom sections of the plug, and then rotating the screwdriver to unlock the top portion of the plug (Figure 2).

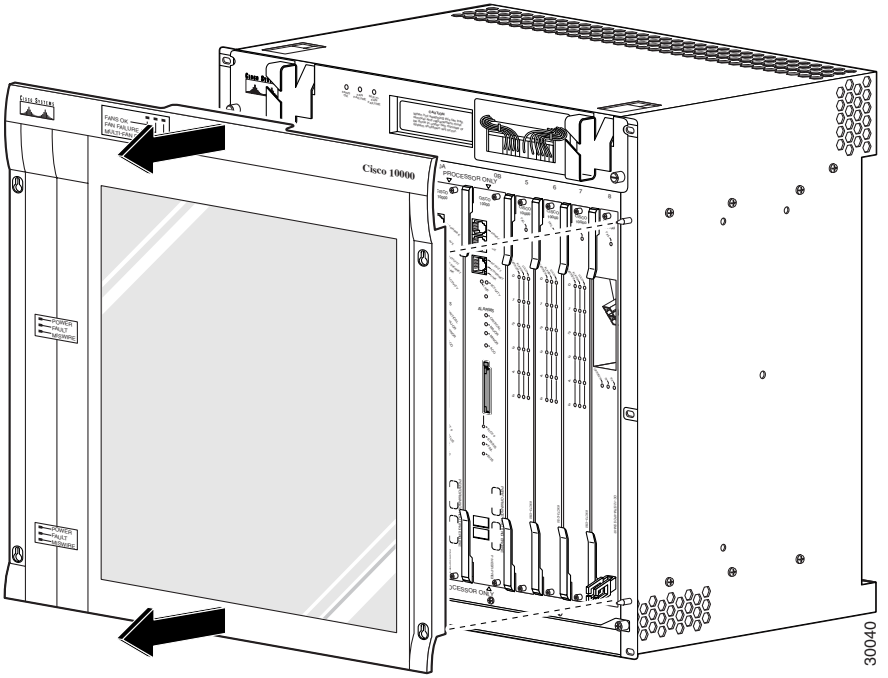
Repeat this procedure for all four bezel plugs and then remove the plugs.

Figure 2 Unlocking the Bezel Plugs



Step 2 Remove the cover by lifting it up slightly and then pulling it toward you (Figure 3).

Figure 3 Removing the Front Cover



Step 3 Continue installing or replacing the AC PEM:

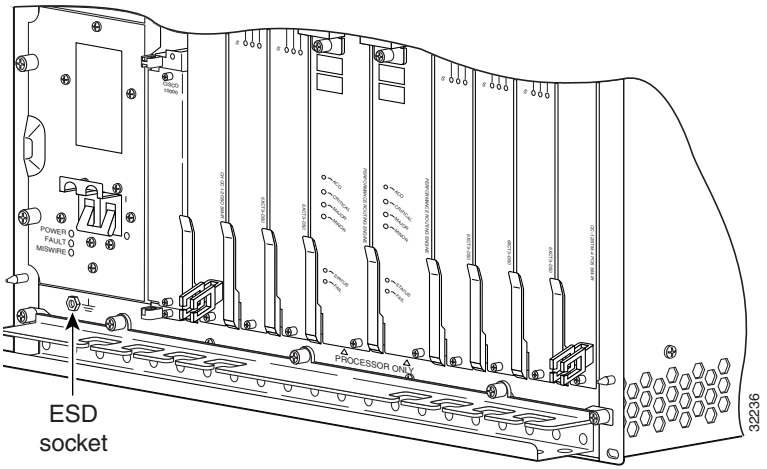
- If you are installing a second AC PEM, go to the "Installing a Second AC PEM" section on page 7.
- If you are replacing an AC PEM, go to the "Replacing an AC PEM" section on page 12.

Installing a Second AC PEM

Use the following procedure to install a second AC PEM in the bottom power bay for redundancy.

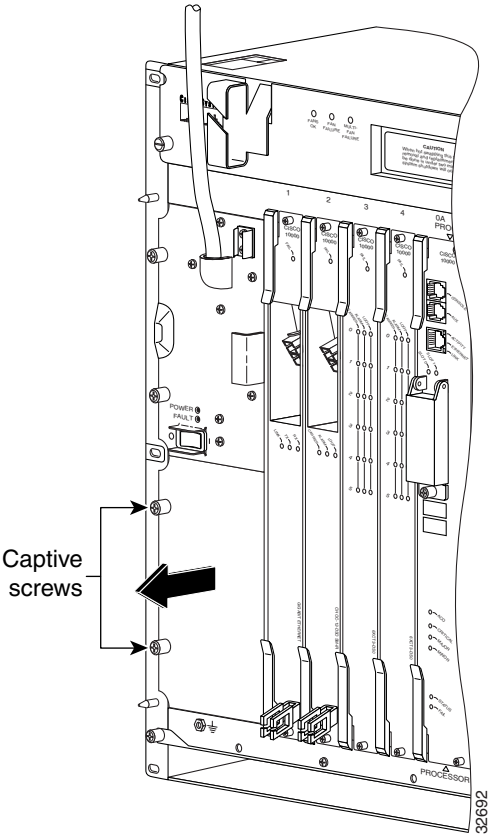
Step 1 Attach an antistatic wrist strap to your wrist and to an ESD socket on the chassis, or to a bare metal surface on the chassis or frame (Figure 4).

Figure 4 ESD Chassis Connection



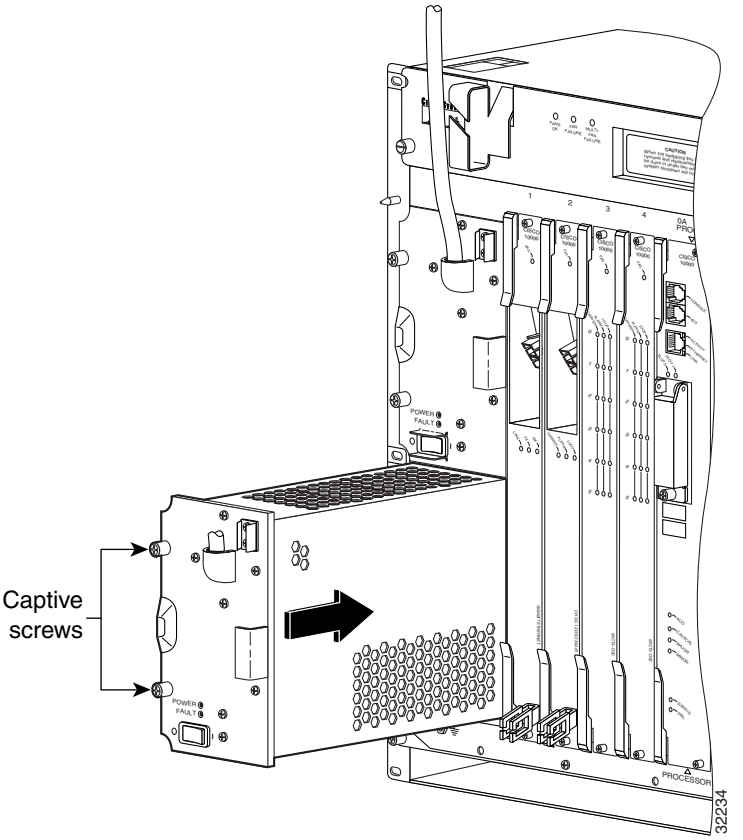
Step 2 Loosen the captive screws to remove the blank cover from the bottom power bay (Figure 5).

Figure 5 Removing the Blank Cover



Step 3 Install the new AC PEM all the way into the power bay to ensure a secure connection to the backplane, and then tighten the captive screws (Figure 6).

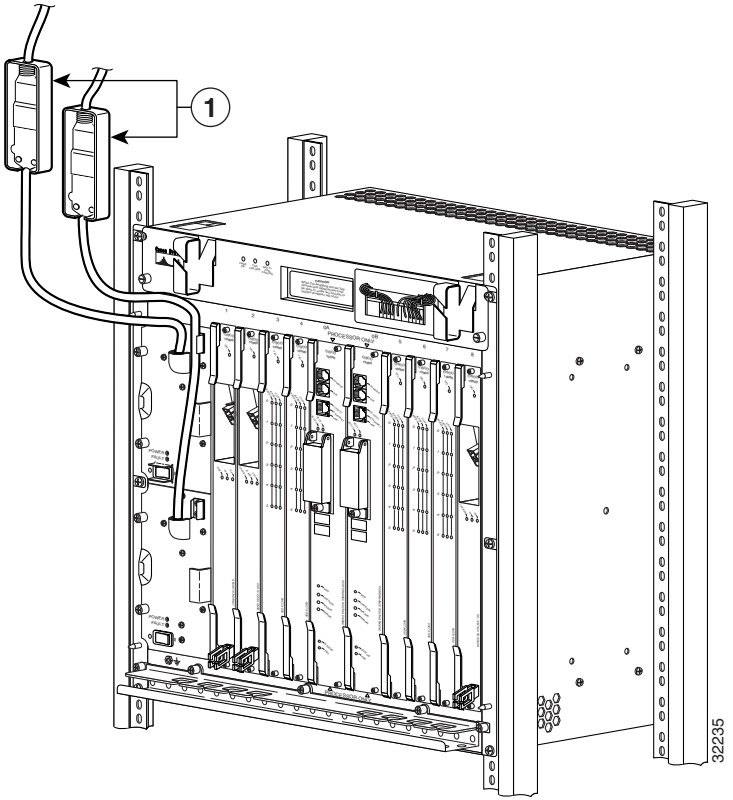
Figure 6 Installing an AC PEM



Step 4 Connect the power cord from the PEM to your power cord that connects to the facility VAC input.

Step 5 Set the AC power cord connectors in a cord strain relief (canoe) to prevent them from accidently disconnecting (Figure 7).

Figure 7 AC Power Cord Connectors in Canoes

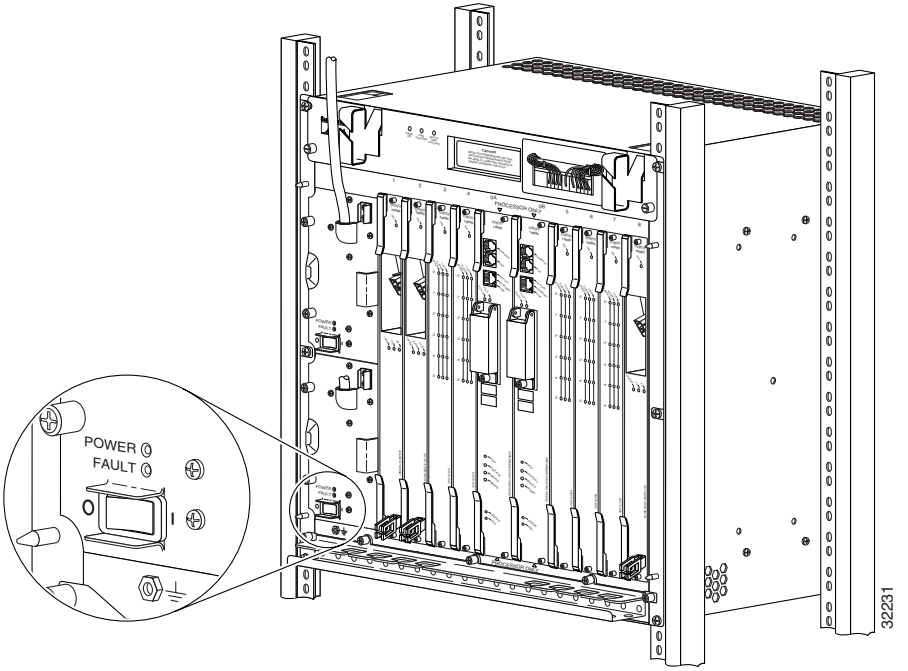


Step 6 Plug the facility AC input power cord into a power receptacle.

Step 7 Set the power switch to the on (|) position (Figure 8).

The (green) power LED on the PEM lights indicating that the PEM is on.

Figure 8 Setting the AC Power Switch to the On Position



Step 8 Replace the front cover.

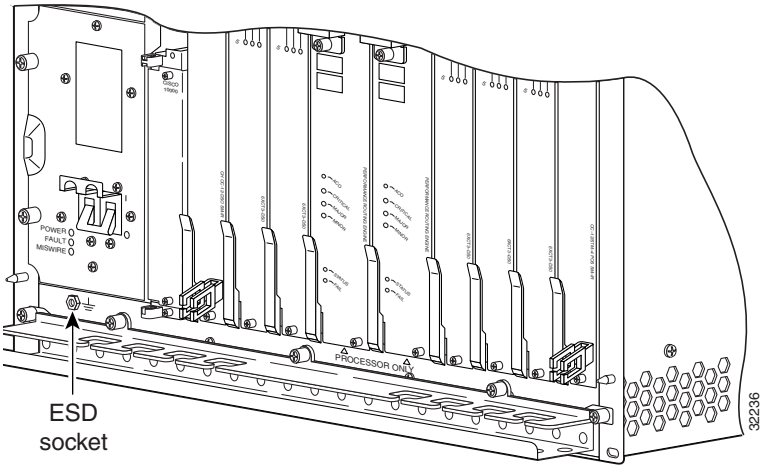
Replacing an AC PEM

Use the following procedure to replace an AC PEM.

Note The illustrations in this guide show how to replace the AC PEM from the bottom power bay. The procedure is the same to replace an AC PEM in the top power bay.

Step 1 Attach an antistatic wrist strap to your wrist and to an ESD socket on the chassis, or to a bare metal surface on the chassis or frame (Figure 9).

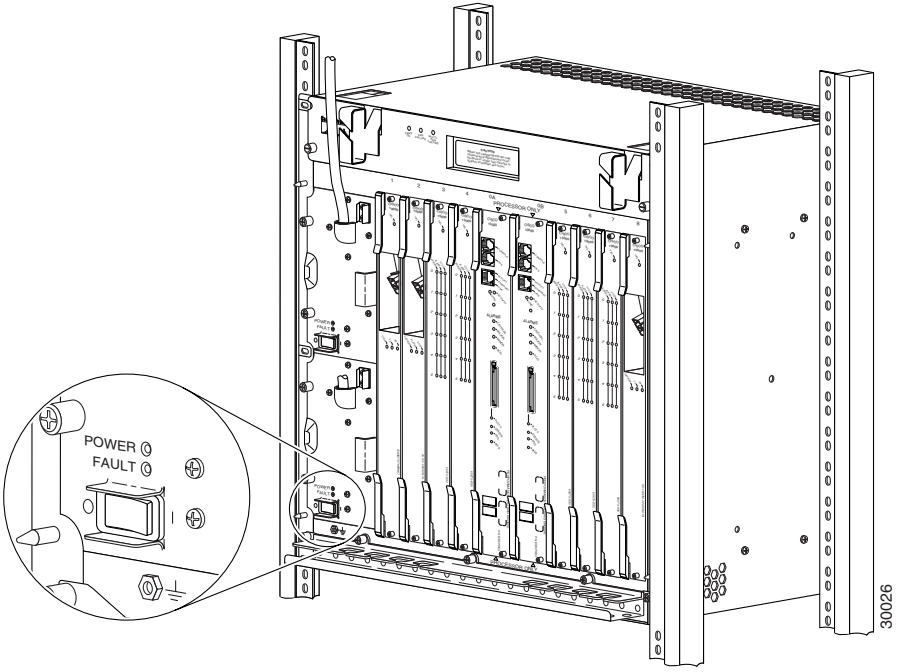
Figure 9 ESD Chassis Connection



Step 2 Power off the PEM you are replacing (Figure 10).

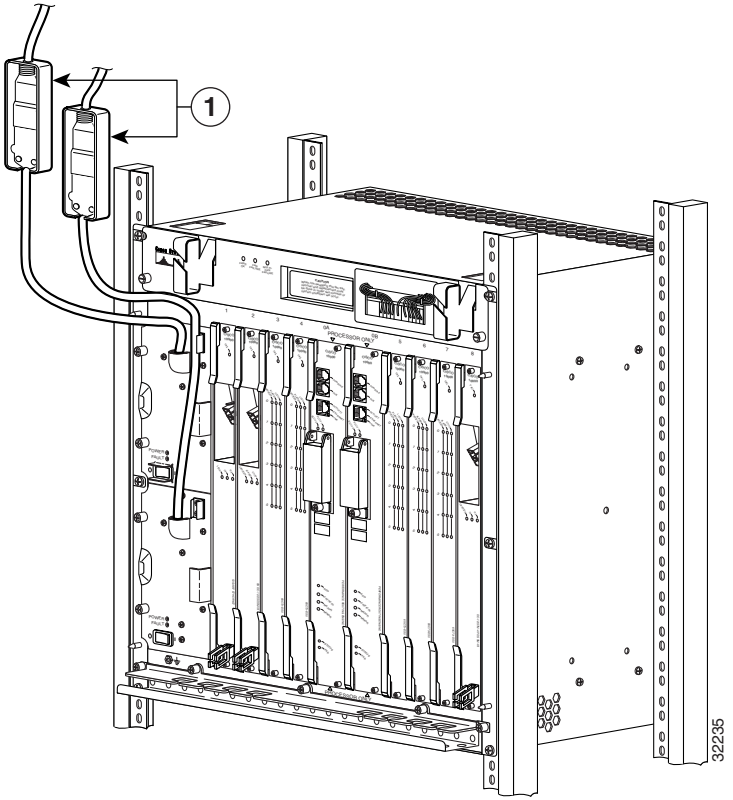
Caution Do not power off both AC PEMs in a redundant system or the system shuts down and all data traffic stops. Only power off the AC PEM you are replacing.

Figure 10 Setting the AC Power Switch to the Off Position



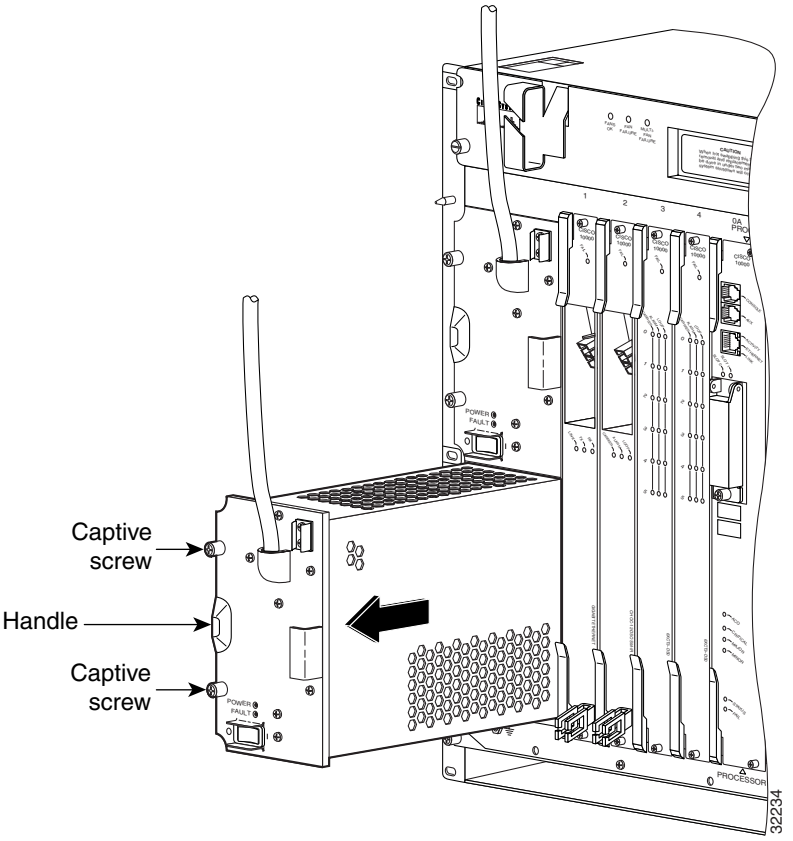
Step 3 Remove the PEM power cable from its canoe and disconnect it from the AC input power cable (Figure 11).

Figure 11 AC Power Cord Connectors in Canoes



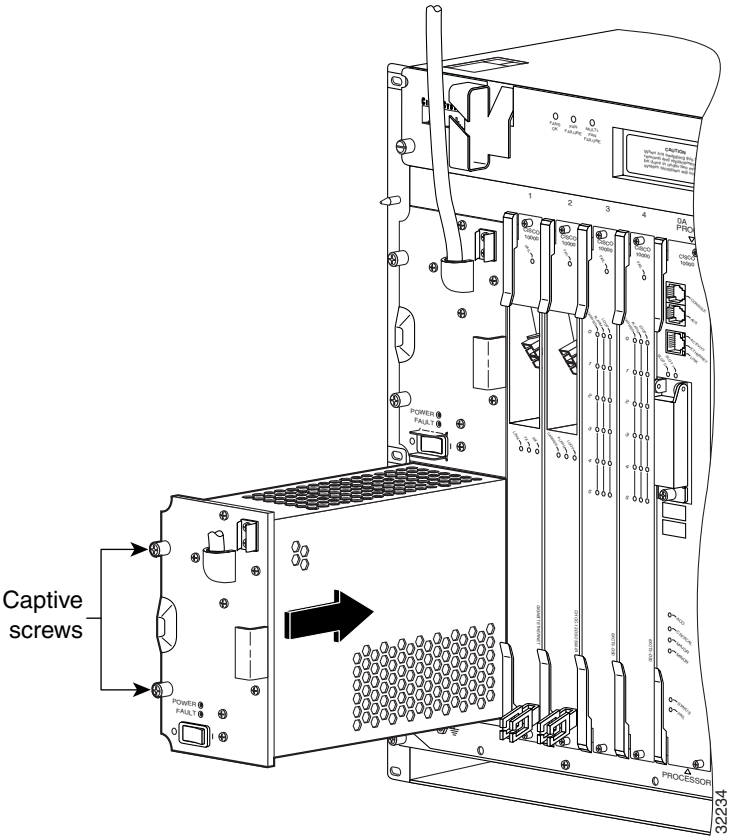
Step 4 Loosen the captive screws on the PEM and remove the PEM from the chassis using the handle on the faceplate (Figure 12).

Figure 12 Removing an AC PEM



Step 5 Install the new PEM all the way into the power bay to ensure a good connection to the backplane, and tighten the captive screws on the PEM (Figure 13).

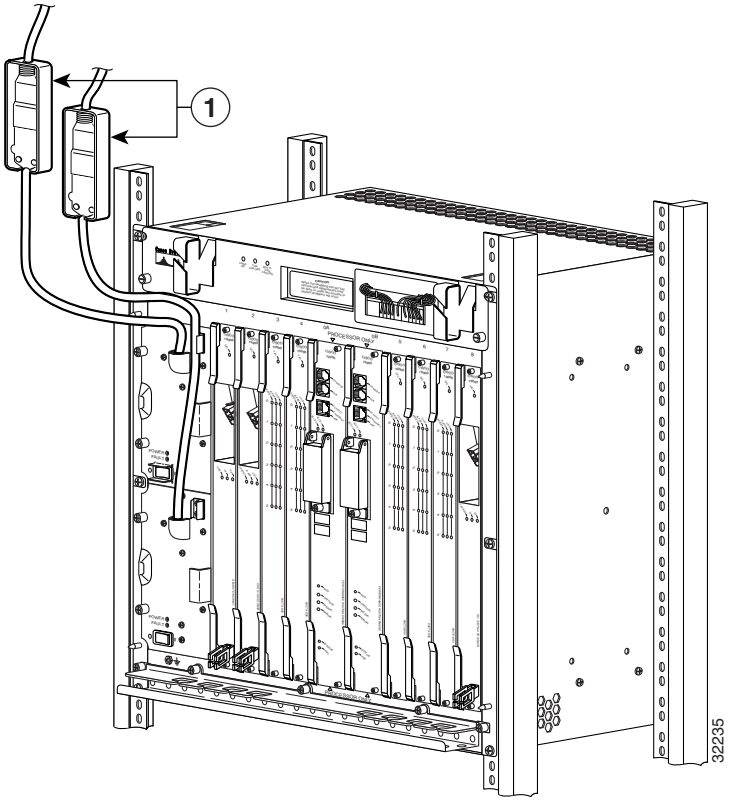
Figure 13 Installing an AC PEM



Step 6 Connect the power cord from the PEM to the power cord that connects to the facility VAC input.

Step 7 Set the AC power cord connectors in a cord strain relief (canoe) to prevent them from accidently disconnecting (Figure 14).

Figure 14 AC Power Cord Connectors in Canoes

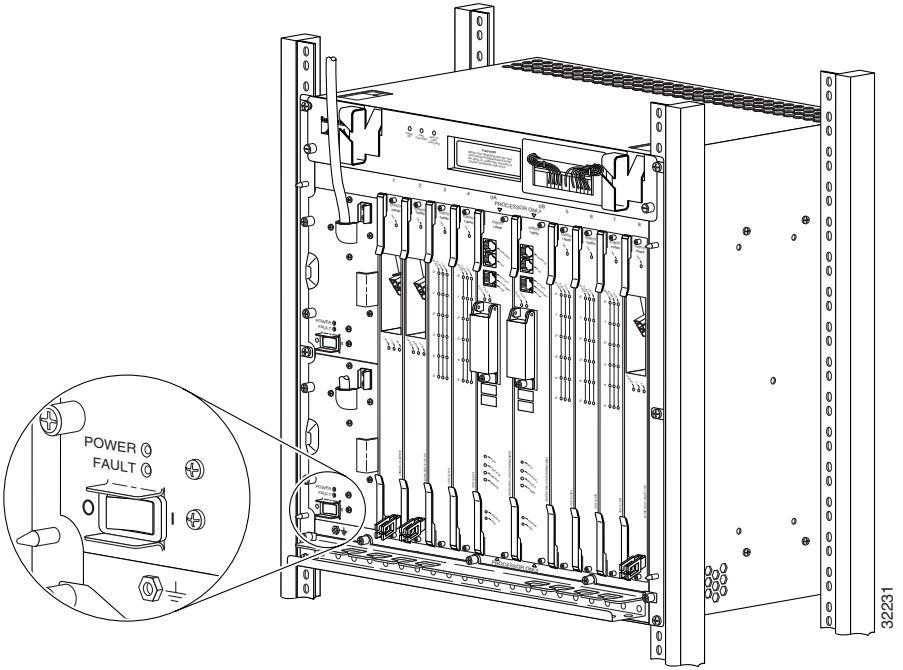


Step 8 Plug the facility AC input power cord into a power receptacle.

Step 9 Set the power switch to the on (|) position (Figure 15).

The (green) power LED on the PEM lights indicating that the PEM is on.

Figure 15 Setting the AC Power Switch to the On Position



Step 10 Replace the front cover.

Troubleshooting the Installation

Table 1 contains troubleshooting information for the AC PEM:

Table 1 AC PEM Troubleshooting

Symptom	Description
System fails to power on	Check that: • All AC power cords are properly connected to the Cisco 10000 and at the power connection end. • The PEM power switches are in the On position. – The AC PEM POWER LED should be on (green). • The blower module is fully inserted and the FANS OK LED is on (green).
AC PEM Fault LED is on (yellow)	The PEM is not operating correctly (see the *Cisco 10000 ESR Troubleshooting Guide*).

FCC Class A Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
- Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

Modifications to this product not authorized by Cisco Systems, Inc. could void the FCC approval and negate your authority to operate the product.

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You can access CCO in the following ways:

- WWW: http://www.cisco.com
- WWW: http://www-europe.cisco.com
- WWW: http://www-china.cisco.com
- Telnet: cco.cisco.com
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

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Documentation CD-ROM

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